CONSTRUCTION SUSTAINABILITY VISUALIZATION
PROPOSED VISUALIZATION PROJECT

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Important factors:

- Goal is to visualize the construction sustainability.

Factor to be selected for visualization:
- Emission (Following figures are based on this)
- Solid Waste
- Water Pollution
- Energy Consumption

Other factors can also be used in the same way.
Important factors:

- Main Categories:
  - Activity Groups
  - Equipment

- Based on data from:
  - Activities
  - Equipment
Visualization 1: Activity Groups based on Equipments
Areas define main Activity Groups:
Area Definition:

- Area of each internal rectangle is equal to total amount of emission from that equipment.
- Color & Intensity could indicate any of the followings based on the selection of the user:
  - Emission / Working-hours
  - Emission / Fuel Consumption
  - Cost of improvement / Percentage of emission reduction
Color Coding:

- Middle tone indicate our accepted standard, it could be current regulation (e.g. Euro IV emission standard)
- Red zone indicate that emission is more than the standard
- Green zone indicate that emission is less than the standard
Visualization 2: Activity Groups based on Activities
Area Definition:

- Area of each internal rectangle is equal to total amount of emission from that activity.

- Color & Intensity could indicate any of the followings based on the selection of the user:
  - Easiness of reducing emission
  - Cost of improvement / Percentage of emission reduction

- E.g. A list of different pouring methods might exists, and alternatives can be proposed based on their costs and emission reductions.
Visualization 3: Equipment based on Activities
Area Definition:

- Area of each internal rectangle is equal to total amount of emission from that activity.

- Color & Intensity could indicate any of the followings based on the selection of the user:
  - Emission / work-hour
  - Cost of improvement / Percentage of emission reduction

- E.g. A list of different pouring methods might exists, and alternatives can be proposed based on their costs and emission reductions.
Visualization 4:
Equipment based on detailed equipments
Area Definition:

- Area of each internal rectangle is equal to total amount of emission from that specific type of equipment.
- Color & Intensity could indicate any of the followings based on the selection of the user:
  - Emission / work-hour
  - Cost of improvement / Percentage of emission reduction
- E.g. based on visualization it could be decided whether a specific type of equipments need to be replaced by another one or not.
Visualization 5: Action effects

Based on the result from previous visualization, reduction actions might be considered.

The result of each action could be visualized in order to see the overall effect of it on the total emission of the project.
Visualization 6: Is Project Green???

- For each day of the construction projects, other than planned actions might lead to reduction or increase in the total emission. (based on visualization 5)

- In this part, the whole lifetime of a construction project is visualized in order to see the effect of actions in each day and overall performance of the project.

- Does it look Green? Which day the project was not green? Can any pattern be found for these days?
Visualization 6: Use of colors

- Red means that for the specific day of project the emission was more than estimated/allowed.
- Green means that for the specific day of project the emission was less than the amount estimated/allowed.
- Black means that the emission was almost the same as estimation/allowed values.
- Intensity of colors can be used to highlight the amount of difference between real value and the estimation/allowed values.